

REMARKS

The claim amendments are entitled to entry pursuant to 37 CFR 116(b)(1) since they merely cancel claims 3 and 5.

Claims 1, 2, 4 and 6 remain pending in the application. Claim 1 is the sole independent claim.

Applicants respectfully request reconsideration of the final rejection of the pending claims in light of the following remarks:

Claims 1, 2 and 6 stand rejected under 35 USC 102(b) as anticipated by Kano (U.S. Patent. No. 5,539,977). Applicants respectfully traverse this rejection, because Kano fails to disclose each and every element set forth in the pending claims.

The sole independent claim - claim 1 - recites an electronic component mounting apparatus that includes the following elements:

a component feeding unit feeding an electronic component;

a suction nozzle picking up the electronic component from the component feeding unit and mounting the electronic component on a printed board; and

a position sensor measuring a vertical position of a lower end of the suction nozzle after the suction nozzle releases the electronic component to the printed board and before the suction nozzle picks up the next electronic component from the component feeding unit.

This combination of elements is neither taught nor suggested by Kano.

The Examiner contends that the claimed position sensor is taught by the line sensor of Kano. However, such a teaching is not possible because Kano's line sensor does not measure a vertical position of a lower end of a suction nozzle *after* the suction nozzle *releases* an electronic component to a printed board and *before* the suction nozzle *picks up* the next electronic component from a component feeding unit as claimed.

In fact, Kano's line sensor operates in the exact opposite manner. As shown in FIG. 2 of Kano depicted below,

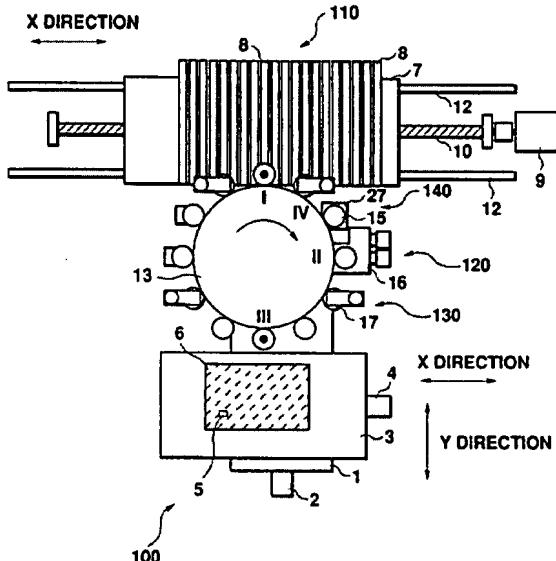


Fig. 2

the cited line sensor 27 is located at position IV of the rotary table 13. According to the clockwise rotation of table 13, position IV is located *after* position I, where chip part 5 is *picked up* from parts feeding device 8, and *before* position III, where chip part 5 is *mounted* on printed substrate 6.

The Examiner contends that “[s]ince the sensor of Kano outputs data continuously, it outputs data both after the suction nozzle releases the component *and* before the suction nozzle picks up a new component”. Final Rejection, paragraph 8. This is not correct, because the continuous data output of the Kano sensor is not relevant to this aspect of the invention. Claim 1 recites measuring a vertical position of a lower end of a *suction nozzle* after the suction nozzle releases an electronic component to a printed board and before the suction nozzle picks up the next electronic component from a component feeding unit.

Thus, even if the Kano sensor were continuously outputting data during the period after chip part 5 is mounted on printed substrate 6 and before another chip part 5 is picked up from

parts feeding device 8, it is clear from Kano's disclosure that during that same period the Kano sensor cannot measure any involved suction nozzle - because the nozzle would be on the opposite side of rotary table 13. Therefore, the Kano sensor cannot be properly applied against the sensor of claim 1.

Accordingly, Kano cannot anticipate independent claim 1. Furthermore, since dependent claims 2 and 6 depend from claim 1, Applicants respectfully submit that claims 2 and 6 also cannot be anticipated by Kano under 35 USC 102.

Claim 2 recites the electronic component mounting apparatus of claim 1 and includes the additional elements:

a drive source moving the suction nozzle vertically and a control device determining a range of a vertical movement of the suction nozzle based on the vertical position of the lower end of the suction nozzle measured by the position sensor.

This combination of elements is neither taught nor suggested by Kano.

The Examiner cites to the following disclosure in Kano for teaching the control device functionality of claim 2:

At this time since the lower end position, being the height position of the lower end of the part 5, is already detected, the descending distance of the holding nozzle 14 is adjusted to accord to the lower end position, and the part 5 is then mounted on the printed substrate 6 by a proper pressure.

Applicants respectfully traverse this rejection because the cited language does not teach determining a range of a vertical movement of a suction nozzle based on a vertical position of a lower end of the *suction nozzle* measured by a position sensor as claimed. Rather, Kano discloses adjusting a nozzle's descending distance based on the detected lower end position of a *chip part*.

Kano adjusts a nozzle's descending distance based on the detected lower end position of a chip part in order to compensate for size variances of chip parts during mounting. This is different than determining a range of a vertical movement of a suction nozzle based on a vertical position of a lower end of the suction nozzle measured by a position sensor as claimed, which,

for example, can compensate during mounting for the size of a suction nozzle that has changed due to wear or thermal expansion over time.

Accordingly, Kano cannot anticipate claim 2 under 35 USC 102.

Claim 4 stands rejected under 35 USC 103(a) as unpatentable over Kano in view of Takeuchi (U.S. Patent. No. 5,661,239). Applicants respectfully traverse this rejection because the Examiner does not establish a *prima facie* case of obviousness. The suggestions or motivations provided by the Examiner do not cure the deficiencies of Kano (the 35 USC 102 art) as explained above.

Claims 1 and 6 stand rejected under 35 USC 103(a) as unpatentable over Ito (JP 2002208800) in view of Kano. Applicants respectfully traverse these rejections because the Examiner does not establish a *prima facie* case of obviousness. As explained above, Kano does not measure a vertical position of a lower end of a suction nozzle after the suction nozzle releases an electronic component to a printed board and before the suction nozzle picks up the next electronic component from a component feeding unit as recited in independent claim 1.

Additionally, Ito fails to teach or suggest, and was not cited by the Examiner for teaching or suggesting, measuring a vertical position of a lower end of a suction nozzle after the suction nozzle releases an electronic component to a printed board and before the suction nozzle picks up the next electronic component from a component feeding unit as recited in independent claim 1.

Accordingly, claim 1 (and claim 6 which depends from claim 1) is not rendered obvious over Ito in view of Kano under 35 USC 103.

It is respectfully submitted that, in view of the foregoing amendments and remarks, the application is in clear condition for allowance. Issuance of a Notice of Allowance is earnestly solicited.

In the event that the Office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorizes the

Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing Docket No. **606402015100**.

Respectfully submitted,

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